

2. (Amended) The paper [Paper] or cardboard according to claim 1, [comprising] wherein the starch component is 0.1-8 wt.% [starch] and the protein component is 0.3-1.4 wt.% [protein in the paper fiber matrix], calculated on the weight of the dry paper fiber matrix [substance].

3. (Amended) The paper [Paper] or cardboard according to claim 1, [or 2, comprising] wherein the starch component is 2-5 wt.% [starch] and the protein component is 0.2-1 wt.% [protein in the], calculated on the weight of the dry paper fiber matrix.

*A
cont'd*

4. (Amended) The paper [Paper] or cardboard according to [any one of the preceding claims] claim 1, 2 or 3, wherein the components originate from agricultural products[, for instance pulses and grains such as pea meal and wheat flour].

Mc:
Sub
C2

5. (Amended) A method for manufacturing paper or cardboard from a fiber matrix and flour[,] comprising subjecting [wherein] at least the flour [is subjected] to a deamidation reaction and/or a partial proteolysis treatment [known in the paper industry for native starch] comprising, mixing the flour with ammonium persulfate, amylase, an acid, protease or a combination thereof, and introducing [after which] the treated [components of] flour [are jointly introduced] into the [paper] fiber matrix in one step.

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6. (Amended) The [A] method according to claim 5, wherein the flour is [treated with a chemical and/or enzymatic starch chain-degrading agent and is then] introduced into the paper fiber matrix utilizing a size press.

12 (Amended) The [A] method according to claim 6, wherein the flour has a protein fraction and the protein fraction [of the flour] is rendered water-soluble.

Sub C3
A/1
cited

8. (Amended) A method for manufacturing paper from a starting paper fiber mass, wherein vegetable material of a high protein and starch content[, preferably grain,] is processed completely, comprising separating the vegetable material into (a) a fraction substantially consisting of the cellulose material and (b) a fraction substantially consisting of the protein and starch material, feeding fraction (a) [to the usual] into the starting paper fiber mass to form a mixed paper fiber mass, [and feeding] treating [the] fraction (b) with ammonium persulfate, amylase, an acid, protease or a combination thereof and [according to any one of claims 5-7 in a step wherein fiber-reinforcing additives are introduced] introducing the treated fraction (b) into the mixed paper fiber mass in one step.

Sub C4
9. (Amended) [Use of unseparated flour components in the fiber matrix of paper] Paper or cardboard [for improving or adjusting the] having improved strength properties, stiffness properties, permeability, surface properties and elasticity [of the paper] comprising: a paper fiber matrix; and
vegetable material having as main components protein and starch;
wherein said protein and starch are degraded with a proteolytic enzyme, ammonium persulfate, amylase, acid or combinations thereof before being introduced into the paper fiber matrix.

*Sub A
Sub C
cont'd*

10. (Amended) [Use of unseparated flour components as] A glue for [fixing] forming the corrugations in corrugated cardboard, said glue comprising:
vegetable material having as main components protein and starch;
wherein said protein and starch are degraded with a proteolytic enzyme, ammonium persulfate,
amylase, acid or combinations thereof.

Please add the following claims:

A2
11. The paper or cardboard according to claim 1, wherein acid is added to the components to effect deamidation of the protein component before the components are subjected to degradation with ammonium persulfate.

Sub C 6
12. The paper or cardboard according to claim 1, wherein the components are subjected to degradation with protease and ammonium persulfate.

Sub C
13. The paper or cardboard according to claim 1, wherein the components are subjected to degradation with protease and amylase.

14. 8
14. The paper or cardboard according to claim 1, wherein the degradation reduces the viscosity to less than about 100 centipoise.

see 6, 11, 12, 13, 14

15. The method for manufacturing paper or cardboard according to claim 1, wherein the degraded flour is introduced into the paper by a size press method.

16. The method for manufacturing paper or cardboard according to claim 5, wherein acid is added to the flour to form an acidic mixture and ammonium persulfate is added to the mixture.

17. The method for manufacturing paper or cardboard according to claim 5, wherein protease is added to the flour to form a mixture and ammonium persulfate is added to the mixture.

18. The method for manufacturing paper or cardboard according to claim 5, wherein protease and amylase are added to the flour.

19. The method for manufacturing paper or cardboard according to claim 5, wherein said treatment further comprises heating the treated flour prior to introducing it to the fiber matrix.

20. The method for manufacturing paper or cardboard according to claim 5, wherein said acid is citric acid or acetic acid.

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